THE EFFECTS OF STATUS ON GROUP AND INDIVIDUAL PERFORMANCE

by

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Past studies in this research program (Zajonc, 1962; Zajonc and Taylor, 1962) indicate that cooperative teams respond to individual differences in performance and to changes in responsibility for the group outcome. On the basis of these findings it was conjectured that when a member's responsibility is incongruent with his level of performance, the group will reorganize so as to decrease the incongruity. In order to attain a common goal, statuses bearing more responsibility must be held by the abler members. Given a range of performances among members, the discrepancy between the performance of an occupant and that accepted as appropriate for his status should be a minimum if the value of the group's outcome is to be maximized.

The immediately preceding study in this series confirmed this hypothesis. (Burnstein, Zajonc, and Taylor, 1963). Groups were structured so that members at various statuses differed in their responsibility for the group outcome. The apparent performance of an occupant was then made incongruent with that expected for his status. Under such conditions groups readily shifted the occupant to another status and the shift was always one which decreased the incongruity. When the occupant's performance rose above the level appropriate to his status, he was moved to a more responsible position; when performance fell below an appropriate level, he was moved to a less responsible status.

In task oriented groups minimal criteria of performance are frequently imposed on the membership as a whole, irrespective of position. When some number of members fail to achieve these criteria, group success decreases. Declines of this type result from a general failure in performance and are relatively independent of whether members have been assigned to positions so as to minimize the discrepancy between apparent and expected performance. Even with a perfect positive correlation between apparent performance and status, group success may still decline if the absolute levels of performance of a certain number of members are below the standard of minimal competence. Burnstein,

Zajonc, and Taylor (1963) demonstrated that intermittent group success markedly inhibits structural reorganization and, thus, delays the reduction of incongruities.

The influence of incongruities and group success on status change has already been reported (Burnstein, Zajonc, and Taylor, 1963). The present report represents a preliminary examination of the changes in performance associated with these status changes. Cooperative groups were structured hierarchically according to the amount a member at a particular rank could contribute to the group outcome. Goal attainment required that successful performance increase as rank or status increased. At the same time a minimal performance criterion was imposed which applied to the group as a whole and determined group success. Incongruities between performance and status were produced experimentally at different ranks. Observations were made of how task performance was affected by (a) induced incongruities, (b) changes in group success, and (c) changes in status.

Method

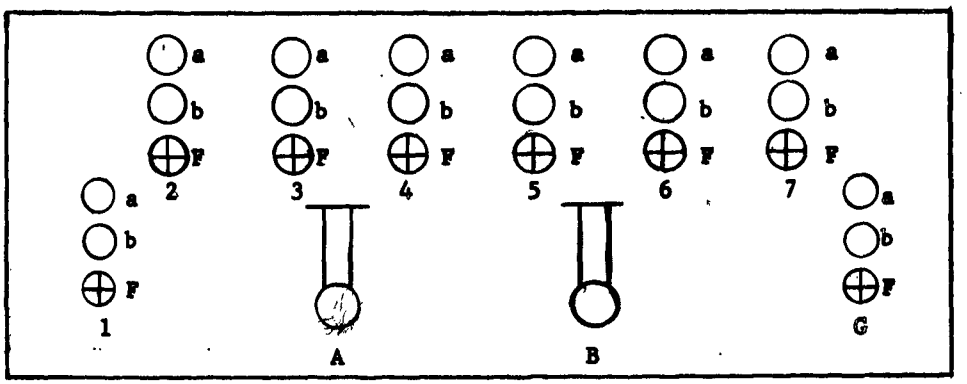
Subjects. The Ss were 240 male volunteers recruited at The University of Michigan. All were paid $1.25 per hour for participating in the experiment.

Apparatus. The Group Reaction Time Apparatus which was used in the present study is described in greater detail elsewhere (Zajonc, 1961). We shall therefore limit the present description to its main operational features.

The apparatus consists of seven individual panels and a console operated by E for the purpose of controlling feedback and time intervals. Since in the present study only four-man groups were used, three of the panels were removed.

Figure 1

Individual Panel



Each panel contains two reaction keys, marked A and B, and seven stimulus displays marked 1 through 7 and one marked G. The stimulus display located in the lower left part of the panel is the S's own display. The others marked by other arabic numerals give feedback about the performance of other Ss. The display marked G gives feedback about the team as a whole. Each stimulus display consists of two stimulus lights, marked a and b, and a red failure light marked F. Lights a and b are stimulus lights which are turned on by the E. They are turned off by the S when he presses the appropriate key (A or B). In the present experiment simple reaction times were observed. In all conditions only one stimulus (1a), one response (A), and one failure signal (F-1) were utilized. No other signals were operative. Instructions led each to believe that if he pressed the appropriate key before the failure light went on, his stimulus light would go off, and his failure light be inhibited. However, the appearance of the failure light was controlled by E according to a fixed schedule described below. Ss sat within 3-4 feet of each other and could easily observe each other's panels

and the appearance of the failure lights.

Procedure. All observations were made on groups of four Ss. The experiment involved the observation of individual and group reaction times (RT's). Individual baseline data were obtained first. Ss working as individuals were instructed to press their reaction keys upon the onset of a stimulus light on their panels. After a ready signal a stimulus light was turned on by E. The intervals between the ready signal and the stimulus light were 3, 4, 5, or 6 seconds distributed equally and randomly over trials. The stimulus light was turned off by the S's response and his RT recorded by E. Following forty training trials in 20-second intervals, and 2-minute intervals following every fifth trial, Ss were asked to privately rank each other in terms of RT speed. This served to orient them to individual differences in performance. The Ss were then told that their task would be to work cooperatively as a group in playing a simple game. The game was described as follows:

> "Fifty similar groups will be run in this study of team performance. Each group will have the same opportunity to earn a number of points. At the end of the study, the four members of the group with most points will each receive $10.00. In order to receive points at least two or more members must press quickly enough to beat the red 'failure' light. The latter will appear on a member's panel when he does not press within a fixed interval after the signal. (The red light remained on for twelve seconds)*. On each trial, if two or more members beat the failure light, the group is eligible to receive points (criterion for group success). However, since each member will be assigned a different number of points to contribute to the group total, the amount of points the group receives will depend on which members beat the failure light. (Thus, to obtain the maximum number of points the group should place the most consistently successful member in the position which contributes the largest number of points, the second most successful in the

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* Information in parentheses was not included in the instructions.

position contributing the second largest number of points, and so on. Each position, then, had a certain level of performance required by the task). If a member does not get the failure light, he can contribute nothing. If only one member is successful, the group receives no points regardless of the number he is assigned."

E then explained that after each block of five trials the members would be permitted to vote on whether they wanted to change the way the points had been assigned. Each S was given a sheet on which he was to privately record his vote. The sheet was divided into two sections each running the length of the paper. One section contained fifteen "yes - no" pairs. If S wanted to change the assignment of points he was to encircle "yes"; if no change was desired, he encircled "no." The second section contained fifteen rows of four numbers which correspond to the seat numbers affixed to the table in front of each S's panel. After voting, S was to write under each number the amount of points that should be assigned to that position. If S voted "no" he assigned the same distribution of points that existed on the preceding block. If he voted "yes," S was to indicate what redistribution of points seemed appropriate. All voting sheets were to remain folded with the votes and preferred point assignments hidden until the end of each block. Ss would then vote and record their preferred point assignments, refold the sheets and place them in the center of the table. E would take the sheets and inform Ss whether or not there was a unanimous "yes" vote. When such unanimity occurred Ss would be given a few minutes to discuss and agree on what changes to make. In front of each seating position there would be a counter which indicated the number of points the member could contribute. Upon reaching agreement Ss were to make the change by shifting the appropriate counters among members. It was made clear that in discussing how to change, Ss were in no way committed to

the point assignments they had written on the voting sheets. However, once unanimity was reached and discussion permitted, some change was required. Within these limits Ss were free to make whatever change was agreed upon. Although votes would be taken after each block of five trials, assurances were given that there would be less than fifteen blocks as the voting sheets might suggest. E explained that it was necessary that Ss not know how many blocks were to be given.

When E was assured that the voting procedure was understood, Ss were told that they would have one practice block to become accustomed to working against the red light. After this block E distributed the counters which indicated the number of points each S could contribute to the group's total. The counters were labelled "100," "80," "40," and "20." On the practice block (before points were assigned) and on each of the three succeeding blocks (after points were assigned) L controlled the appearance of the red light in the following manner: Ss with 100 points (rank 1 or R-1) were successful on 90% of the trials, Ss with 80 points (R-2), 70% of the trials, Ss with 40 (R-3) points, 50% of the trials, and Ss with 20 points (R-4), 30% of the trials. The group success criterion (at least two members must beat the red light) was met on every trial except one over these four blocks. Within these constraints the distribution of individual failures within each block was random. The first four blocks, thus, served to reinforce the initial distribution of points. On block five and thereafter the pattern of individual and group success was manipulated to form four experimental conditions:

Condition I. On block five Ss in R-1 rank were reduced to 40% success. All other ranks were brought to 60% success. During block six R-1 was reduced to 20% success and held there for the remainder of the experiment. All other ranks remained at the 60% level. Group success was continuous, occurring on every trial.

Condition II. This was identical to Condition I except that group success was intermittent, occurring on only 40% of the trials in each block.

Condition III. On block five, R-4 became successful on 60% of the trials while Ss in all other ranks were successful 40% of the time. R-4 moved to 80% success during block six and continued at this level for the rest of the experiment. All other ranks remained at the 40% level.

Condition IV. This was identical to Condition III, except that group success was intermittent, occuring on only 40% of the trials in any blocks.

Two control conditions were run for eleven blocks in which no change occurred in the relative success of members. Condition V and Condition VI experienced the same schedule of individual and group success as all other groups on blocks one to four. Groups in Condition V remained on this schedule for the next seven blocks. However, on block five, Ss in Condition VI were moved to 40% group success for the ensuing seven blocks. On these blocks R-1 remained at 80% success, R-2 at 60% success, R-3 at 40% and R-4 at 20%. Table 1 depicts the group and individual success schedules in the different conditions.

It was important to minimize the possibility Ss might learn that their actual RT was unrelated to the appearance of the failure light. To establish a set which would mask the pre-scheduled nature of success and failure the following was done: 1) Pilot studies indicated that individual differences in RT are larger during the early part of the procedure. In fact, on baseline trials in a few groups one member's hand and finger movement was visibly slower than the rest. Thus, the experimental induction was most likely to fail during early trials when a visibly slow member succeeds. It was decided that initial rank or status (the number of points assigned by E) would correspond to the member's rank on baseline performance, the fastest man being given the highest status, the second fastest, second highest status, and so on. This meant that during the first four blocks in which performance feedback reinforced the initial hierarchical structure,

Table 1

Schedule of success (x) and failure (0) for individual ranks (R) and for groups (GS)

A. Blocks 1 - 4*: Reinforcement of Initial Structure

	Trials																			
R	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	x	x	x	x	x	x	x	0	x	x	x	x	x	x	x	x	x	0	x	x
2	x	x	0	x	x	0	x	x	0	x	x	0	x	x	x	x	x	x	0	0
3	x	x	0	x	0	x	0	0	x	0	0	x	x	0	x	0	0	x	0	x
4	0	x	x	0	0	0	0	x	0	0	x	0	0	x	0	0	x	0	0	0
GS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	0	x

*Common to all conditions. Repeated on blocks 5-11 in Condition V

B. Changes in reinforcement following fourth block.

Condition I: A decrease in success for R-1 with continuous group success**

	Trials																			
R	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	x	0	x	0	0	0	0	0	x	0	0	0	0	0	x	0	x	0	0	0
2	x	x	0	x	0	x	0	x	0	x	0	x	x	x	0	0	x	0	x	x
3	0	x	x	0	x	x	x	0	0	x	x	0	x	x	0	x	0	x	0	x
4	x	0	0	x	x	0	x	x	x	0	x	x	0	0	x	x	0	x	x	0
GS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

**Last three schedules were repeated until criterion was reached.

-Table 1 continued-

Condition II: A decrease in success for R-1 with intermittent group success**

	Trials																			
R	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	x	0	x	0	0	0	x	0	0	0	0	0	x	0	0	x	0	0	0	0
2	x	0	x	x	0	0	x	x	x	0	x	0	x	0	x	x	x	0	x	0
3	x	x	x	0	0	0	x	0	x	x	0	0	x	x	x	x	0	x	x	0
4	x	0	x	0	x	x	x	0	x	0	0	x	x	0	x	x	0	0	x	x
GS	x	0	x	0	0	0	x	0	x	0	0	0	x	0	x	x	0	0	x	0

Condition III: An increase in success for R-4 with continuous group success**

	Trials																			
R	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	0	x	0	x	0	0	0	x	0	x	x	0	0	0	x	0	x	x	0	0
2	x	0	x	0	0	0	x	0	x	0	x	0	x	0	0	0	0	x	0	x
3	0	0	x	x	0	x	x	0	0	0	0	x	0	x	0	x	0	0	x	0
4	x	x	0	0	x	x	0	x	x	x	0	x	x	x	x	x	x	0	x	x
GS	x	x	x	x	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

**Last three schedules were repeated until criterion was reached.

-Table 1 continued-

Condition IV: An increase in success for R-4 with intermittent group success**

	Trials																			
R	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	x	0	x	0	0	x	0	0	x	0	0	x	0	0	x	0	0	x	x	0
2	x	0	0	x	0	0	0	x	x	0	0	x	0	0	x	0	x	0	x	0
3	x	0	0	x	0	0	0	x	x	0	x	x	0	0	0	0	0	x	x	0
4	x	x	0	x	0	0	x	x	x	x	0	x	x	x	x	x	0	x	x	x
GS	x	0	0	x	0	0	0	x	x	0	0	x	0	0	x	0	0	x	x	0

Condition VI: Group success becomes intermittent while relative differences among R's remain the same.

	Trials																			
R	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	x	x	x	0	x	0	x	x	x	x	x	0	x	x	x	x	x	0	x	x
2	0	x	0	x	x	x	0	x	0	x	x	x	0	x	0	0	x	x	x	0
3	0	x	0	0	x	0	0	x	0	x	x	0	0	x	0	0	x	0	x	0
4	0	x	0	0	0	0	0	x	0	0	x	0	0	0	0	0	0	0	x	0
GS	0	x	0	0	x	0	0	x	0	x	x	0	0	x	0	0	x	0	x	0

**Last three schedules were repeated until criterion was reached.

faster members would succeed more frequently than slower ones. By block five it was expected that individual differences in RT would be reduced to a point where physical movement gave no discriminable cue to relative speed. 2) The instructions introducing the tasks stressed that the RT interval would be very short, that a person's RT was variable overtime, and that when one attempted to attain minimum RT such variability was not subject to voluntary control.

In Conditions I - IV the following criteria were used to terminate the procedure: (1) No unanimous "yes" votes occurred within seven blocks after the experimental manipulation began, i.e., by block 11. (2) No second unanimous "yes" votes occurred within three blocks after the first change was agreed on. (3) No third unanimous "yes" votes occurred within one block after the second change was agreed on. Groups in Conditions V and VI, where no change was expected, were run for eleven blocks. Votes were taken at the end of each block after points were assigned to members. Upon termination of the experimental procedure all Ss filled out a questionnaire and a personality inventory. They were then given complete information about the experiment.

Results

1. Performance in Different Statuses. After block four, schedules of success for individual members were systematically changed to induce appropriate shifts in status. The extent to which this manipulation produced increments or decrements in the percent of success at different statuses is shown in Table 2. RT for Ss in different statuses is examined from the block on which status distinctions were introduced (block 2) to a point preceding frequent shifts in status (block 6). Only four of the 60 groups made a change in status before the sixth block - two in Condition I and one each in Conditions III and IV. On the immediately succeeding block 19 groups voted unanimously to change. The RT curves for the two extreme statuses (R=1 and R=4) under continuous success are

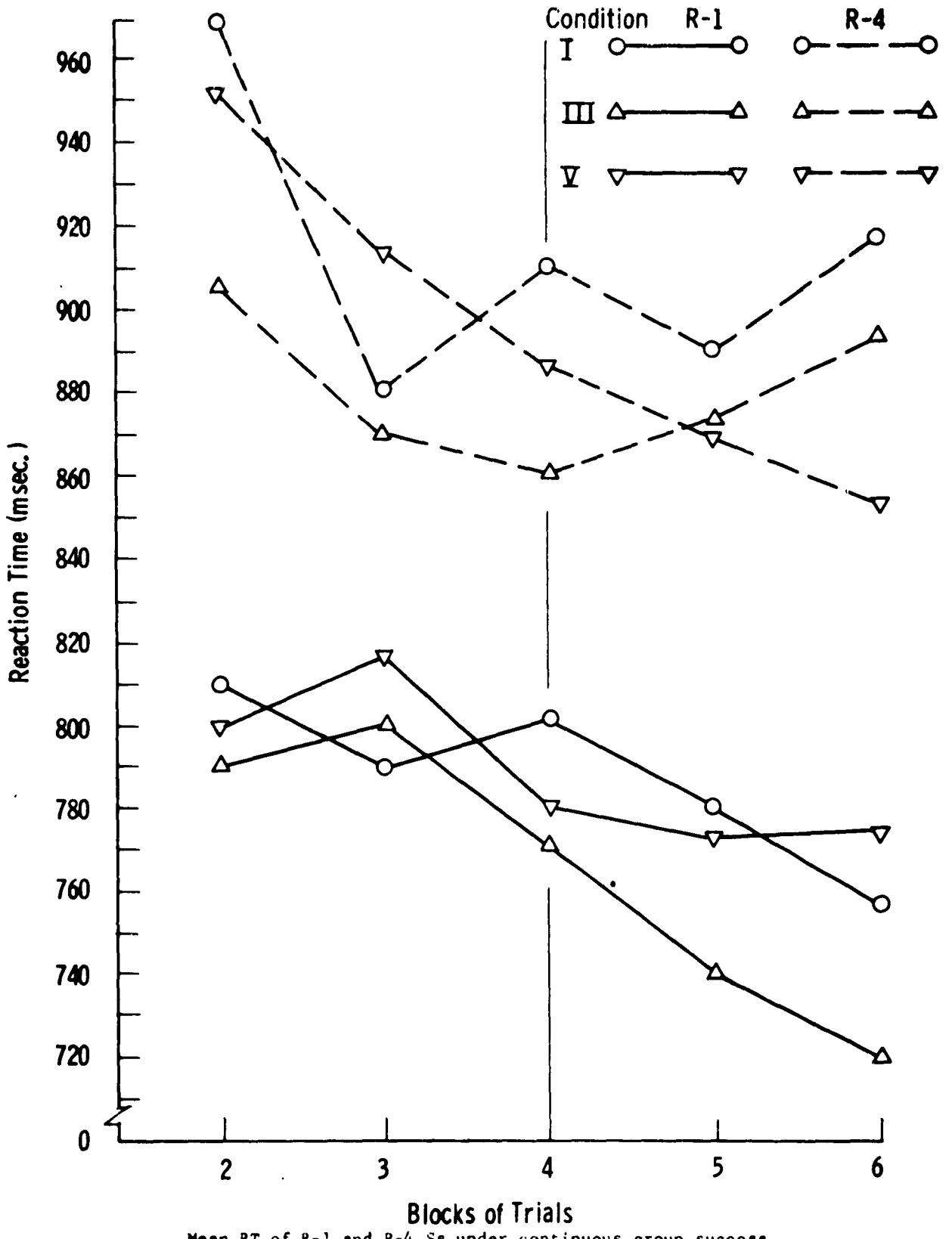
Table 2

Mean percent success at different statuses during reinforcement of the initial structure (block 1-4) and during induction to change (block 5+)

Status	Conditions I and II		Diff.
	Blocks		
	1 - 4	5+	
1	90%	20%	-70%
2	70%	60%	-10%
3	50%	60%	+10%
4	30%	60%	+ 3%
	Conditions III and IV		
1	90%	40%	-50%
2	70%	40%	-30%
3	50%	40%	-10%
4	30%	80%	+50%

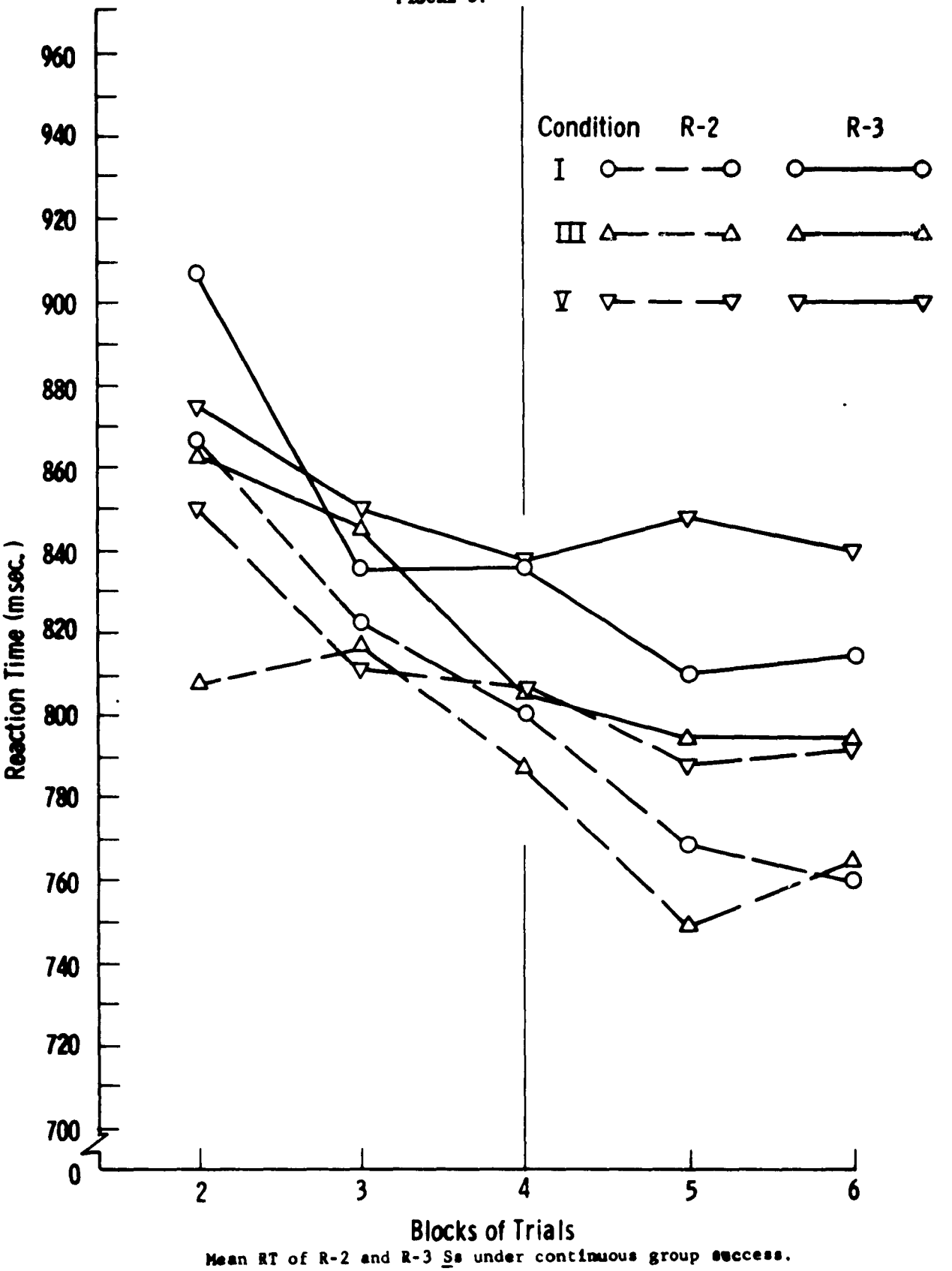
presented in Figure 2; the curves for the two intermediate status (R-2 and R-3) in Figure 3. The mean RT for each condition over blocks is shown in Figure 4. The analysis of variance of these curves is summarized in Table 3. The large differences as a function of rank are not surprising since Ss were assigned to a status which correspond to their baseline performance. Changes in RT over blocks, of course, reflect practice effects. The DC X B interaction indicates that during the first few blocks Ss in Condition I improved at a faster rate than Ss in the other two conditions. The gap between blocks 2 and

FIGURE 2.



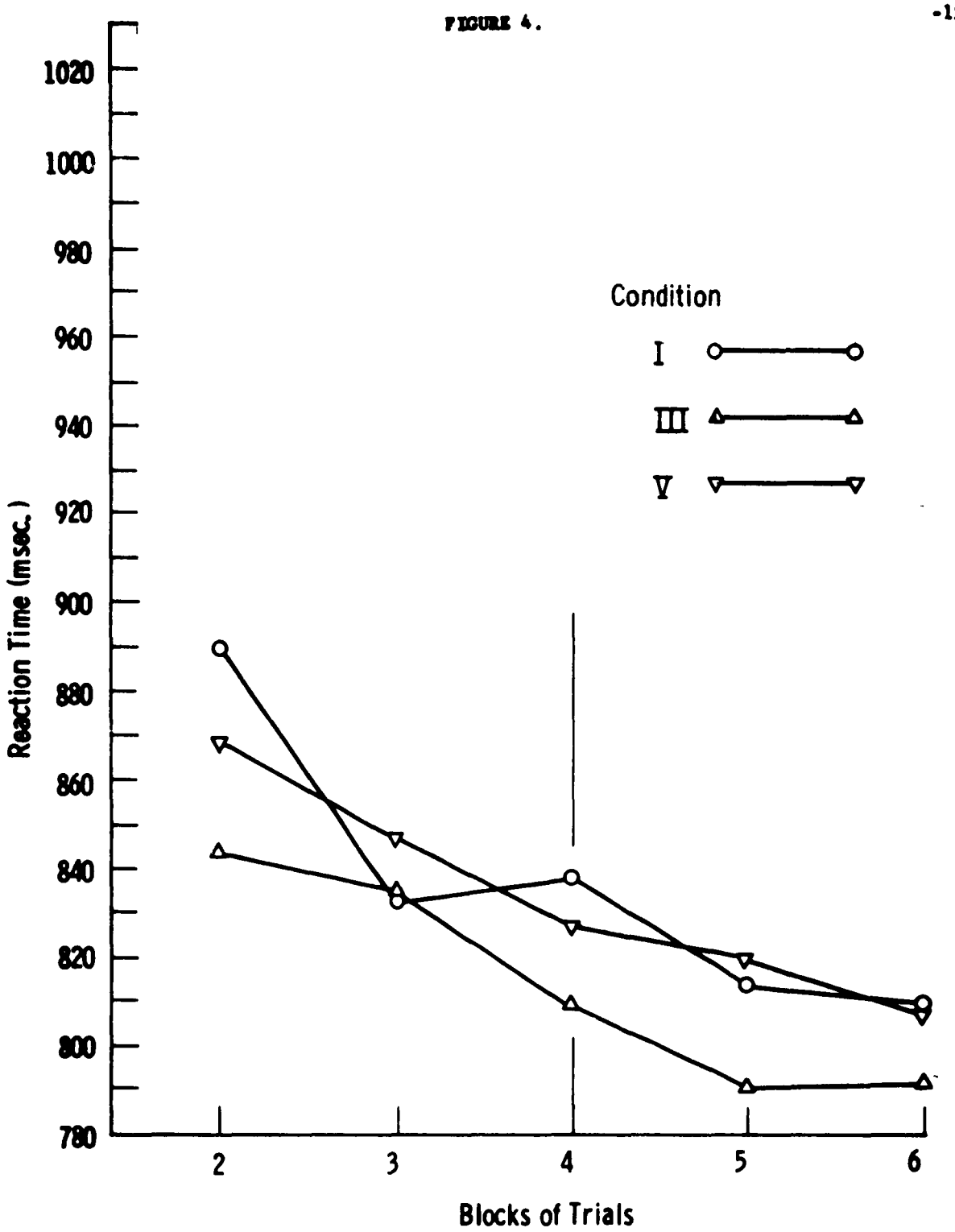
Mean RT of R-1 and R-4 Ss under continuous group success.

FIGURE 3.



Mean RT of R-2 and R-3 Ss under continuous group success.

FIGURE 4.



Mean group RT under continuous success

(Conditions I, III, V)

Table 3

Summary of the analysis of variance of RT under continuous group success

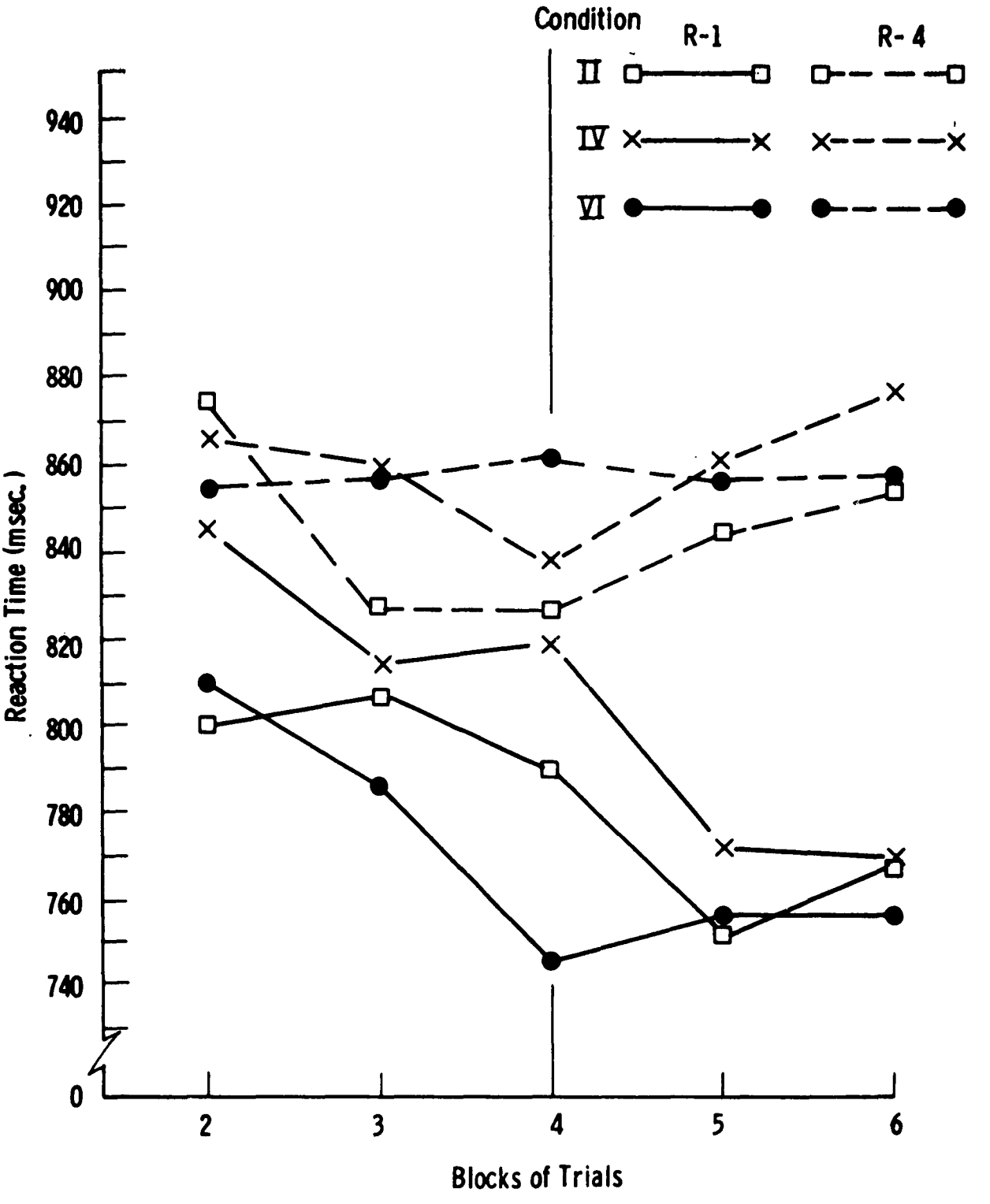
Source	df	MS	F
Direction of Change (DC)	2	365.170	---
Rank (R)	3	3821.501	8.610****
DC X R	6	15.772	---
Error (b)	108	443.859	
Blocks of Trials (B)	4	777.385	68.789****
DC X B	8	37.194	3.912****
R X B	12	36.194	3.912****
DC X R X B	24	26.478	2.343***
Error (w)	432	11.301	
Total	599		

***p $\leq$ .005
****p $\leq$ .001

3 is significant at the .01 level in the former condition while the comparable gaps in the other conditions do not approach an acceptable level. In addition, the gap between the last block on which a member's status is congruent with performance (block 4) and the block preceding frequent shifts in status (block 6) is significant at the .05 level in III, but not in any other condition. The R X B interaction reflects the significantly faster rate of improvement in RT for Ss placed in low statuses. Of considerable interest is the tendency for RT to improve when individual success declines and to slow when individual success improves. This is evident in the significant DC X R X B interaction. The decreases in RT between blocks 4 and 6 are highly reliable for R-1 in I and for

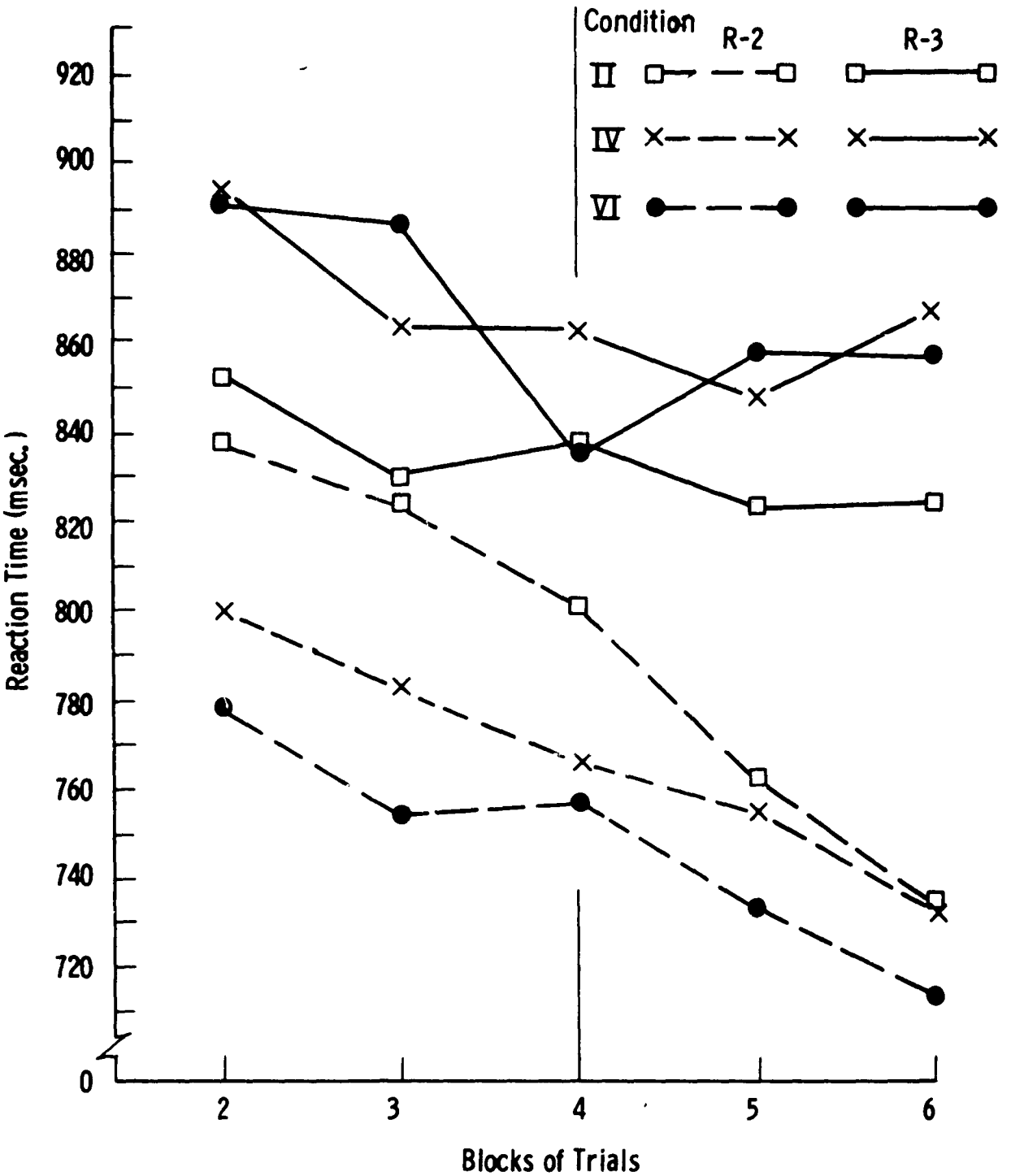
R-1 in III ($p<.01$, gap test), while the RT for R-4 in III increases significantly ($p<.02$, gap test). The comparable gap tests for R-2 indicate a significant decrease in RT in I ($p<.01$); a similar decrease for R-2 in III approaches an acceptable level of significance ($p<.10$). None of the other gaps between blocks 4 and 6 reflects a reliable difference. However, in all cases R-1, R-2 and R-3 in I and III evidence a greater decrease in RT than their respective controls in V; at the same time R-4 in I and III shows less improvement in RT than their control.

A similar analysis is made of performance from blocks 2 to 6 under intermittent group success. The curves are presented in Figures 5 to 7 and the analysis of variance is summarized in Table 4. Although no marked differences in rates of improvement as a function of rank appears in the early blocks (only the gap between blocks 2 and 3 for R-4 in II was significant at the .05 level), the changes in RT beyond block 4 are remarkably similar to those which occurred under continuous group success. R-1 and R-3 in II and in IV decrease in RT to a greater extent than their respective controls, while R-4 increases in RT more than its control. There, however, appears to be little difference in the rate of improvement between R-2 in II and IV and R-2 in VI. Gap tests indicate that the difference between blocks 4 and 6 for R-1 in II, and for R-1 in IV are significant at less than the .10 and .05 levels, respectively, while the comparable gap for R-1 in VI is insignificant and, in fact, opposite in direction. The declines in performance between blocks 4 and 6 in R-4 are both significant at less than the .10 level. The control gap is opposite in direction, but not reliably so. Similar gaps for R-3 do not approach significance in any of the three conditions. The gaps between blocks 4 and 6 for R-2, both in the two experimental and in the control condition, are quite significant ($p<.01$ in II and VI; $p<.05$ in IV).



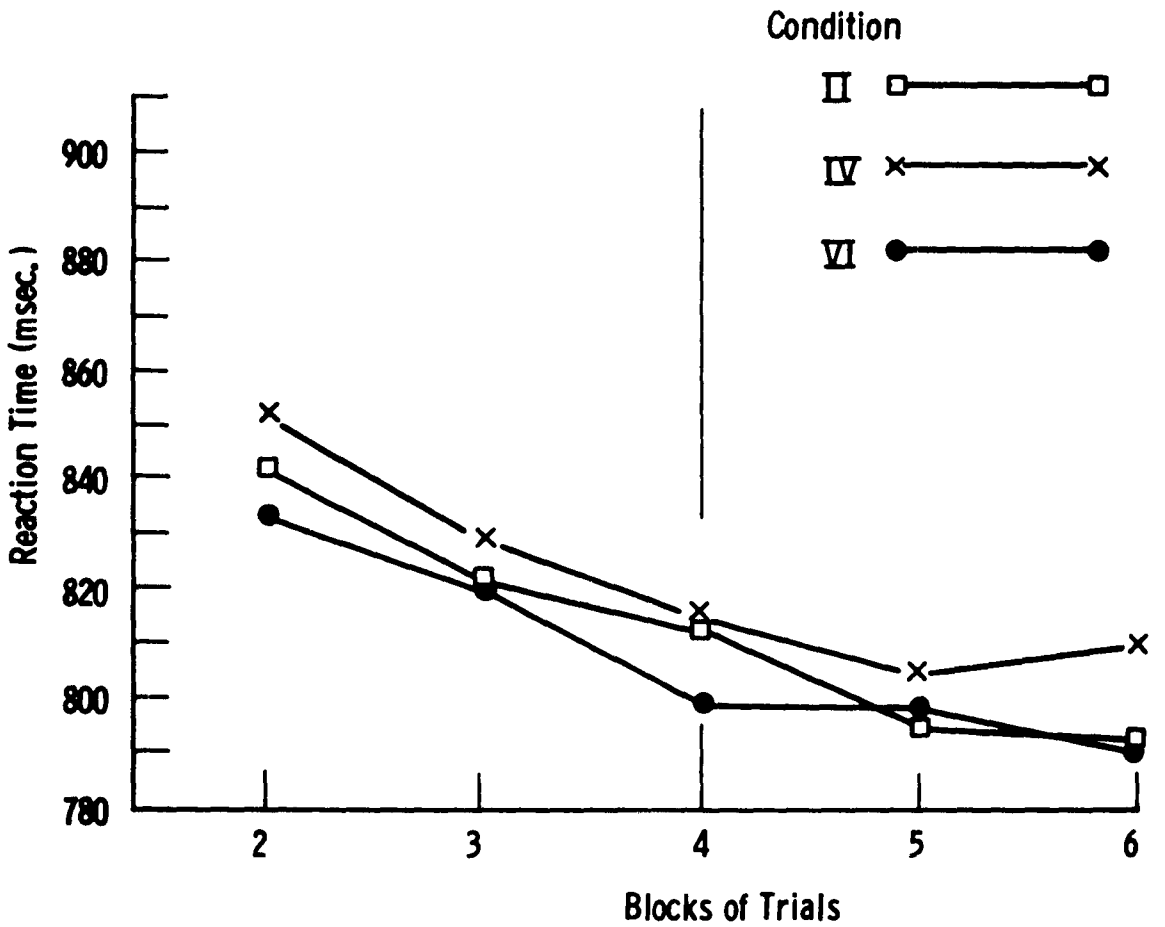
Mean RT of R-1 and R-4 under intermittent group success.

FIGURE 6.



Mean RT of R-2 and R-3 Ss under intermittent group success.

FIGURE 7.



Mean group RT under intermittent success (Conditions II, IV, VI).

Table 4

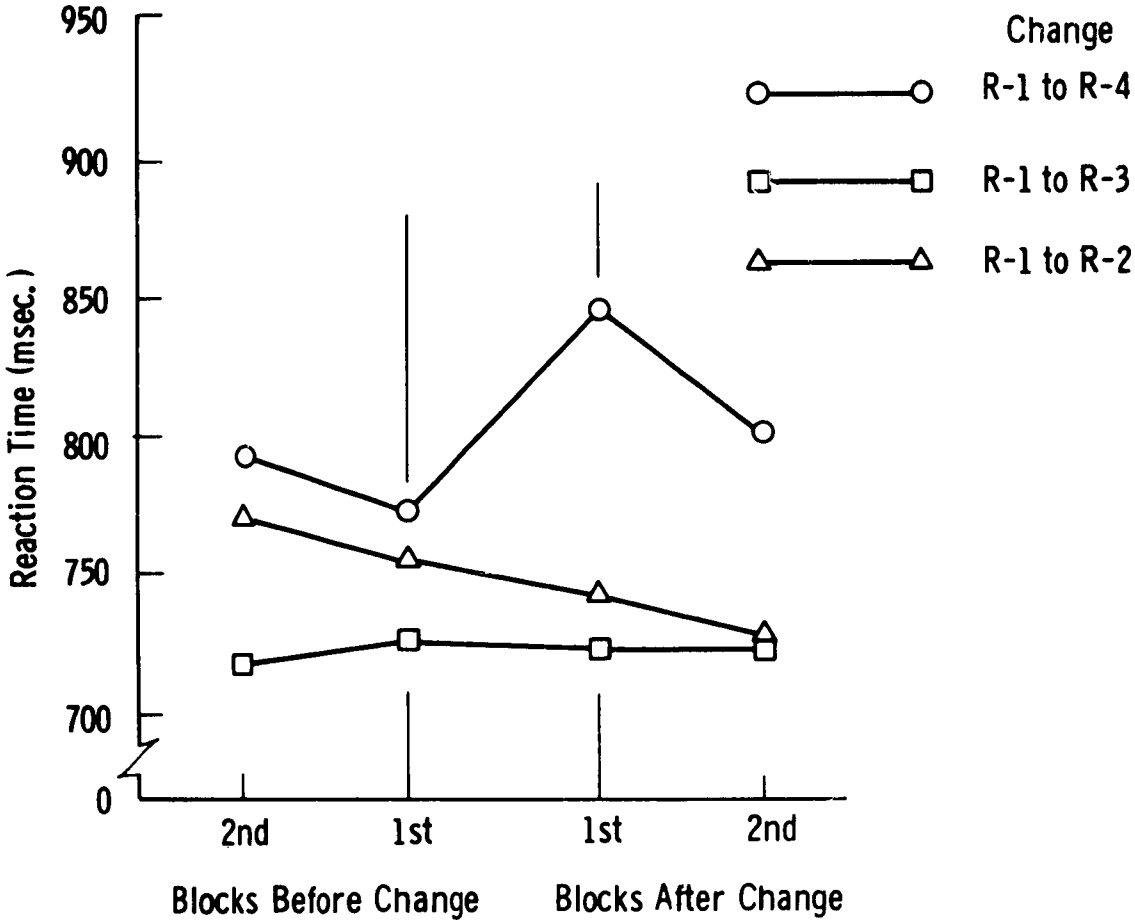
Summary of the analysis of variance of RT under intermittent group success. From the block in which status distinctions were introduced to the block preceding frequent status changes.

Source	df	MS	F
Direction of Change (DC)	2	85.902	---
Rank (R)	3	3082.495	6.967****
DC X R	6	171.021	---
Error (b)	108	442.420	
Blocks of Trials (B)	4	361.293	14.565****
DC X B	8	7.812	---
R X B	12	62.553	2.523***
DC X R X B	24	23.182	---
Error (w)	432	24.806	
Total	599		

*** $p<.005$
**** $p<.001$

2. Changes in Status and Changes in Performance. When the 20 members in R-1 in conditions I and II were reduced in status, seven were placed directly in R-4, six in R-3 and seven in R-2. This provided three degrees of change with a similar number of Ss falling at each level. Figure 8 illustrates the mean RT of these Ss on the two blocks immediately preceding and on the two blocks immediately following the first change. The analysis of variance of these curves is summarized in Table 5. Clearly, a performance decrement occurs which varies directly with the extent to which status is reduced. A small reduction does not disrupt the general improvement in RT over blocks; an intermediate reduction wipes out this practice effect; a large reduction in status produces a decided decrement in performance. The gap between the immediately pre- and post-change blocks is significant at the .01 level for the R-1 to R-4 change.

FIGURE 8.



Change in RT over 2 pre- and 2 post-change blocks under 3 degrees of change.

Table 5

Summary of the analysis of variance of RT over two pre- and post-change blocks when the member in R-1 is moved to R-2, R-3 or R-4.

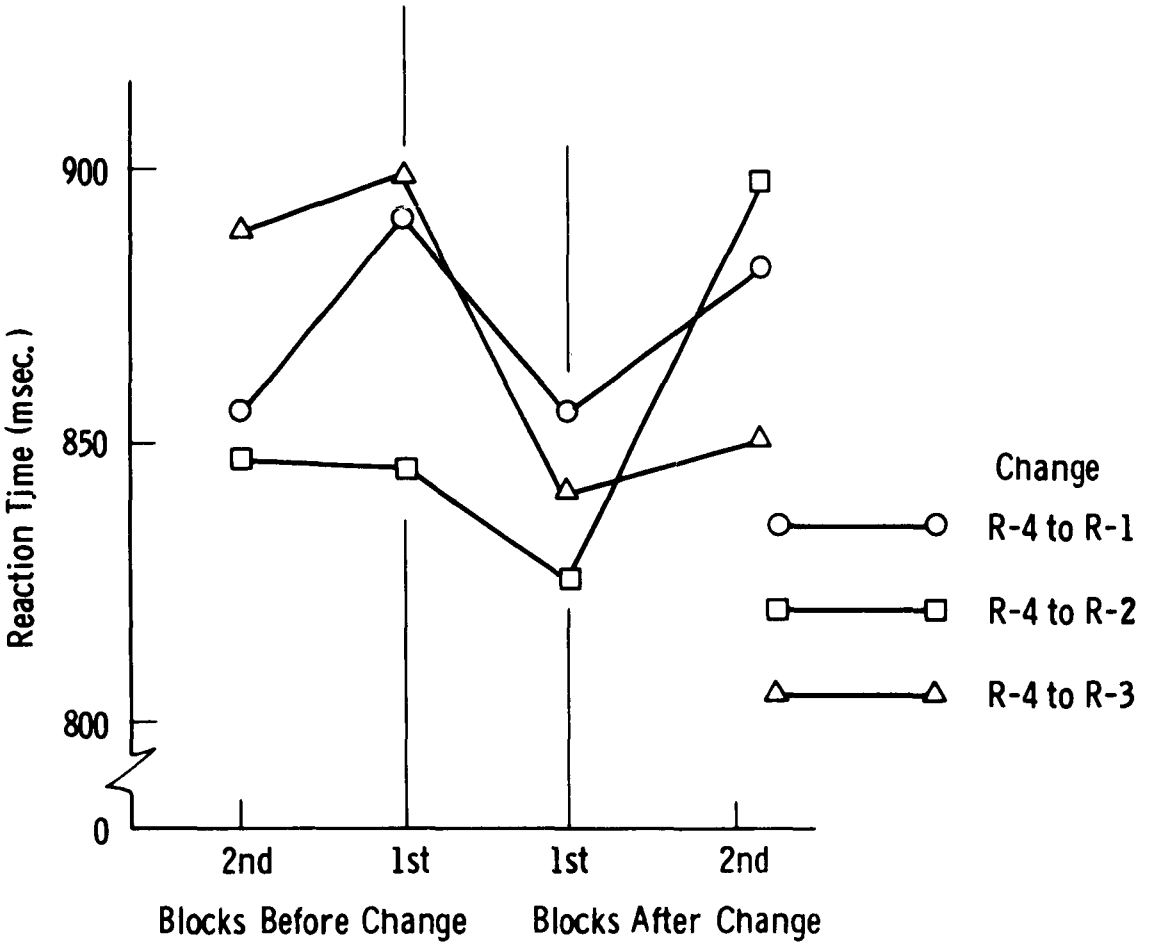
Source	df	MS	F
Amount of Change (AC)	2	468.561	9.297****
Error (b)	77	50.400	
Blocks of Trials (B)	3	20.623	4.332**
AC X B	6	41.950	8.813****
Error (w)	231	4.761	
Total	319		

** $p<.01$
**** $p<.001$

The subsequent improvement in RT produced a reliable difference between the first and second post-change block ($p<.05$ gap test) when status reduction was maximal. The tendency for RT to decline in the face of only small reductions in status is evidenced by the near-significant gaps between the first and second pre-change blocks ($p<.10$). None of the small differences over blocks was reliable among the R-1 to R-3 Ss.

In analysing the effect of status change on Ss originally in R-4, it was decided to include all changes in Conditions I and II, as well as those in Conditions III and IV. This was done because in Conditions III and IV a large majority of first changes in R-4 were optimum changes, i.e., Ss in R-4 were moved directly to R-1; in only three cases were Ss in R-4 first moved to R-2 and in only three cases, to R-3. Including all four conditions provided fourteen cases in which Ss in R-4 were changed to R-1, five of R-4 to R-2, and nine cases of R-4 to R-3. Mean RT on the two pre- and post-change blocks are presented in Figure 9. An analysis of variance, summarized in Table 6, indicates

FIGURE 9.



RT on the two blocks of trials immediately before a change in rank and on the two blocks of trials immediately after a change in rank under three degrees of change (decline).

that the difference among conditions disappears on the block immediately following a change to reappear on the second post-change block. Gap tests reveal that

Table 6

Summary of the analysis of variance of RT over two pre- and two post-change blocks when the member in R-4 is moved to R-3, R-2 or R-1.

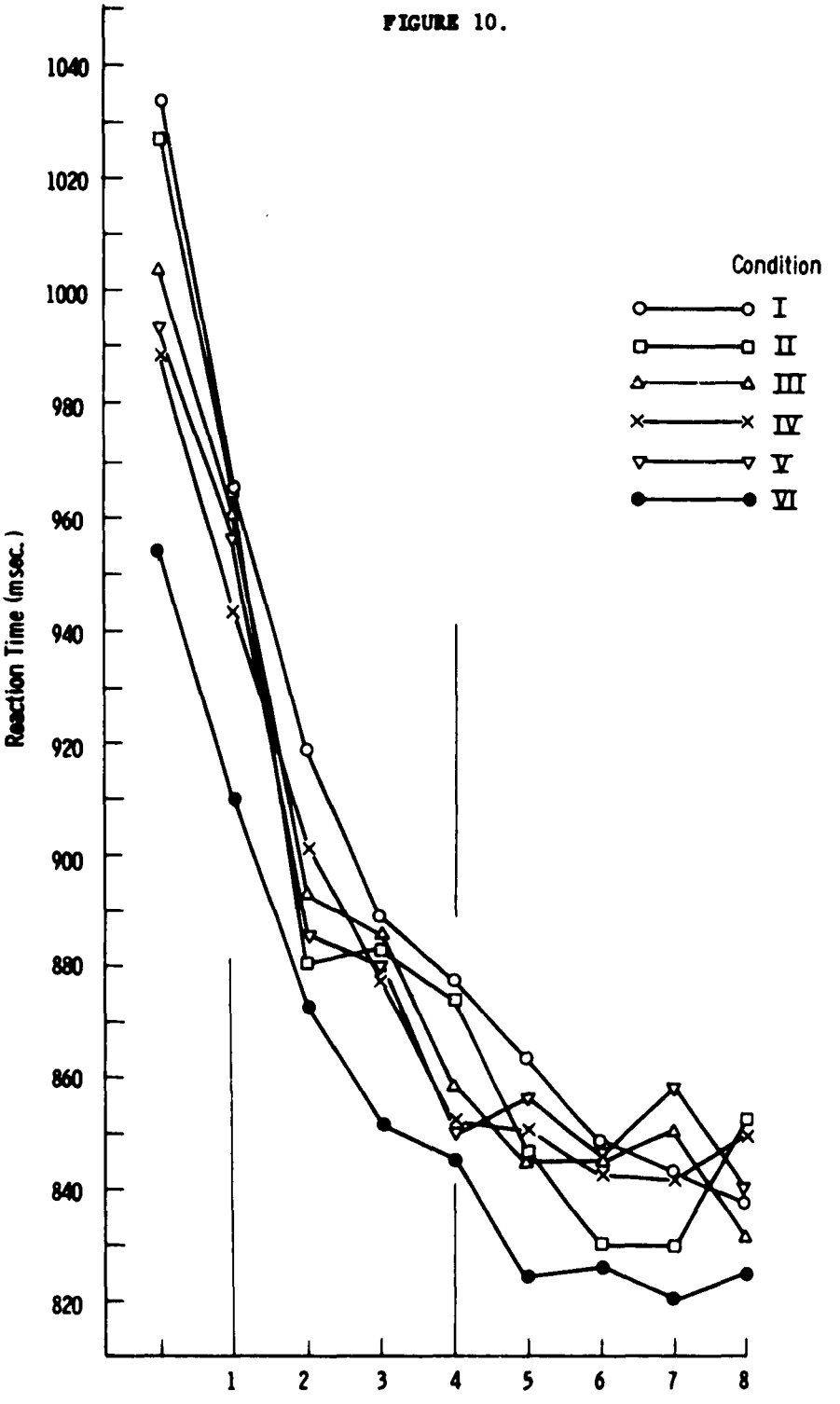
Source	df	MS	F
Amount of Change (AC)	2	22.063	
Error (b)	109	87.360	
Blocks of Trials (B)	3	86.508	14.786****
AC X B	6	32.441	5.545****
Error (w)	327	5.850	
Total	447		

****$p < .001$

decreases in RT just after change tend to be reliable ones independent of the extent of change. The differences in RT for the R-4 to R-1, R-4 to R-2, and R-4 to R-3 changes are significant at the .05, .10, and .01 levels, respectively. The form of the relationship between status change and RT is not altered if only Ss in III and IV are used. But the small number of Ss produces unreliable differences.

3. Group Performance. The index of group performance in the following analysis is the RT of the second fastest group member. Essentially the same results are obtained if group performance is measured in terms of the mean RT of all four group members. The curves presented in Figure 10 indicate a sharp decrease in RT from baseline levels not only when Ss begin to receive feedback regarding their own and other members' performance but also when status distinctions are

FIGURE 10.



Mean group RT in all conditions.

initially established. After this there is gradual and continuous decline in RT over blocks. An analysis of variance of these curves indicates no marked difference in group performance among experimental conditions or between experimental and controls. This analysis is summarized in Table 7. Gap tests reveal significant improvement in performance at the .05 or .10 level (a) between baseline performance and the first feedback block (block one), and (b) between the first feedback block and the establishment of status distinctions (block two) in all six conditions. No other gap between blocks is significant,

Table 7

Summary of the analysis of variance of group RT

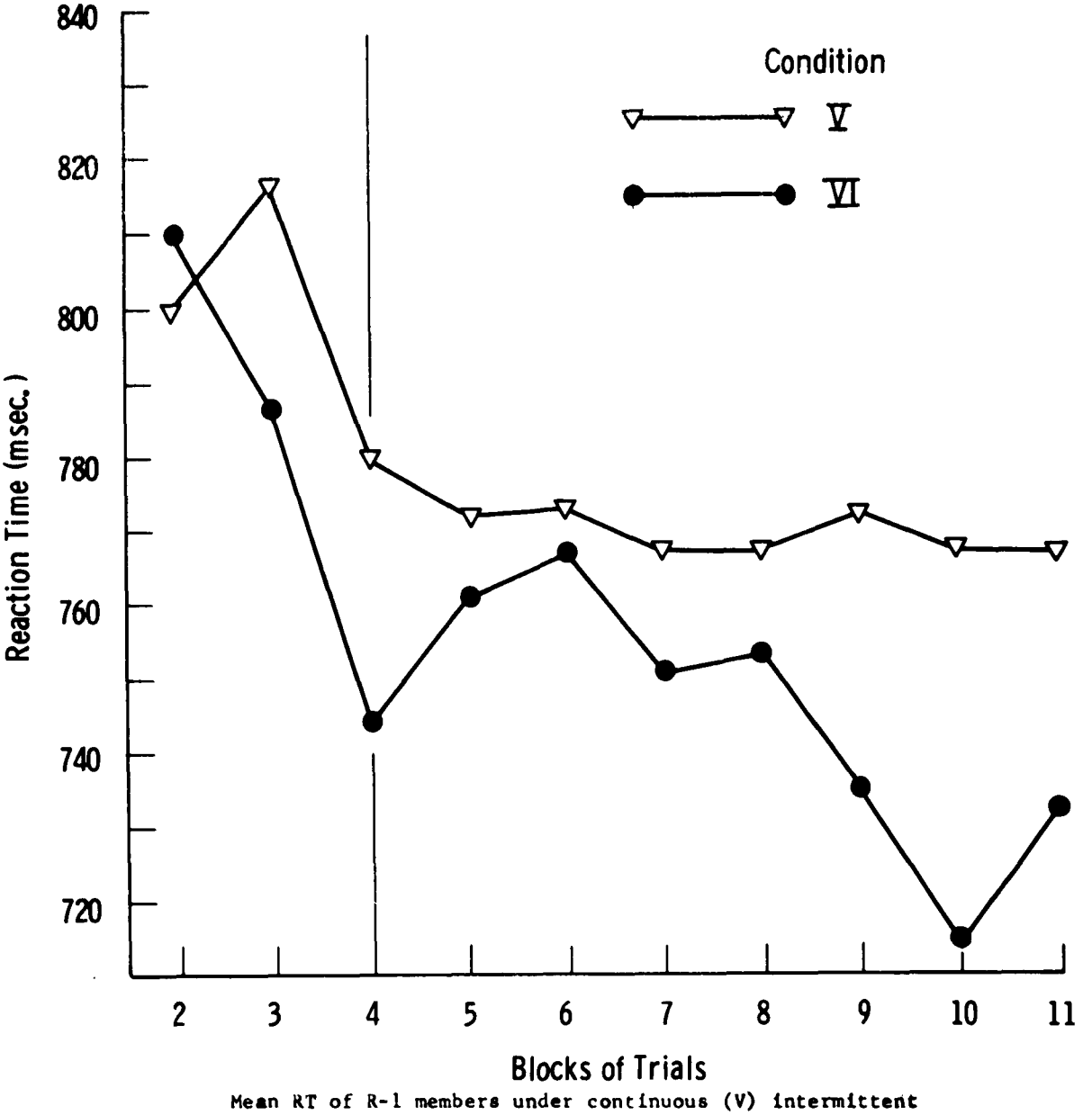
Source	df	MS	F
Direction of Change (DC)	2	181.932	---
Group Success (GS)	1	217.874	---
DC X GS	2	73.281	---
Error (b)	54	230.390	
Blocks of Trials (B)	8	1869.578	98.643****
DC X B	16	17.151	---
GS X B	8	24.196	1.411
DC X GS X B	16	6.585	---
Error (w)	432	17.152	
Total	539		

****P<.001

although the decline in RT between block 4 (the last continuous group success block) and block 5 (the first intermittent group success block) in Condition II approaches an acceptable level ($P < .15$). During blocks 6 and 7 the average RT under intermittent success was in all conditions less than that under continuous success. However, the GS X B interaction is not highly reliable ($P < .20$). After block 8 the number of groups remaining declines appreciably and analysis is no longer feasible.

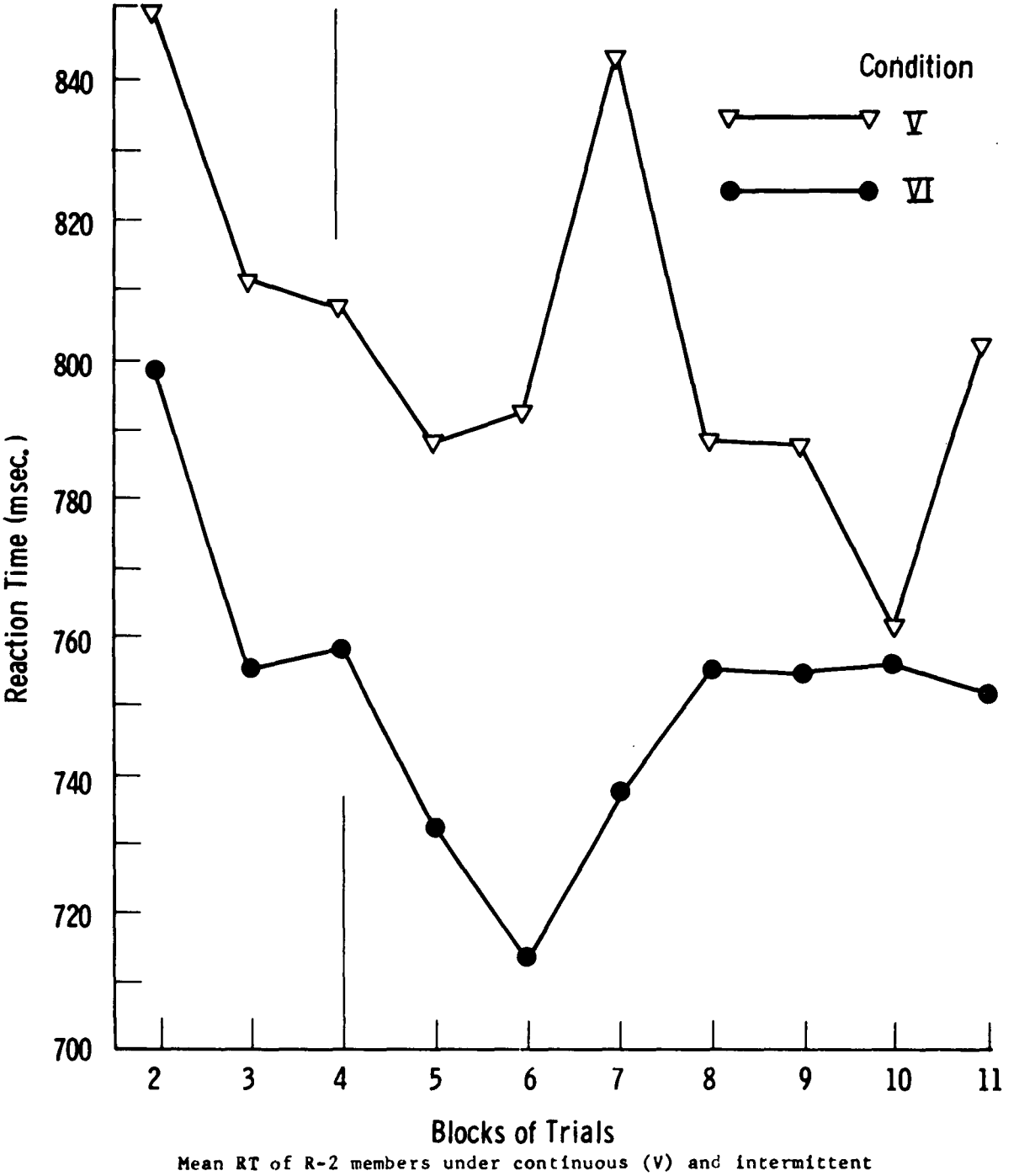
The groups in both control conditions performed for a fixed number of trials (11 blocks) which was longer than that given all but one experimental group (one group in IV which did not change was run for 11 blocks). For this reason a separate analysis is made of performance in V and VI. Individual and group performance for the controls over all 10 blocks in which status distinctions existed are presented in Figures 11 to 15. The analysis of variance of these data is summarized in Table 8. The significant second order interaction suggests that intermittent group success has markedly different effects on occupants of different statuses. R-1 in VI, in contrast to R-1 in V, decreases in RT during later blocks. R-2 in VI decreases in RT relatively early and then returns to its former level. No difference in RT obtains at R-3 as a function of group success. Finally, the difference between conditions reverses at the lowest rank. R-4 in V displays a large decline in RT while R-4 in VI remains at about the same level of performance throughout.

FIGURE 11.



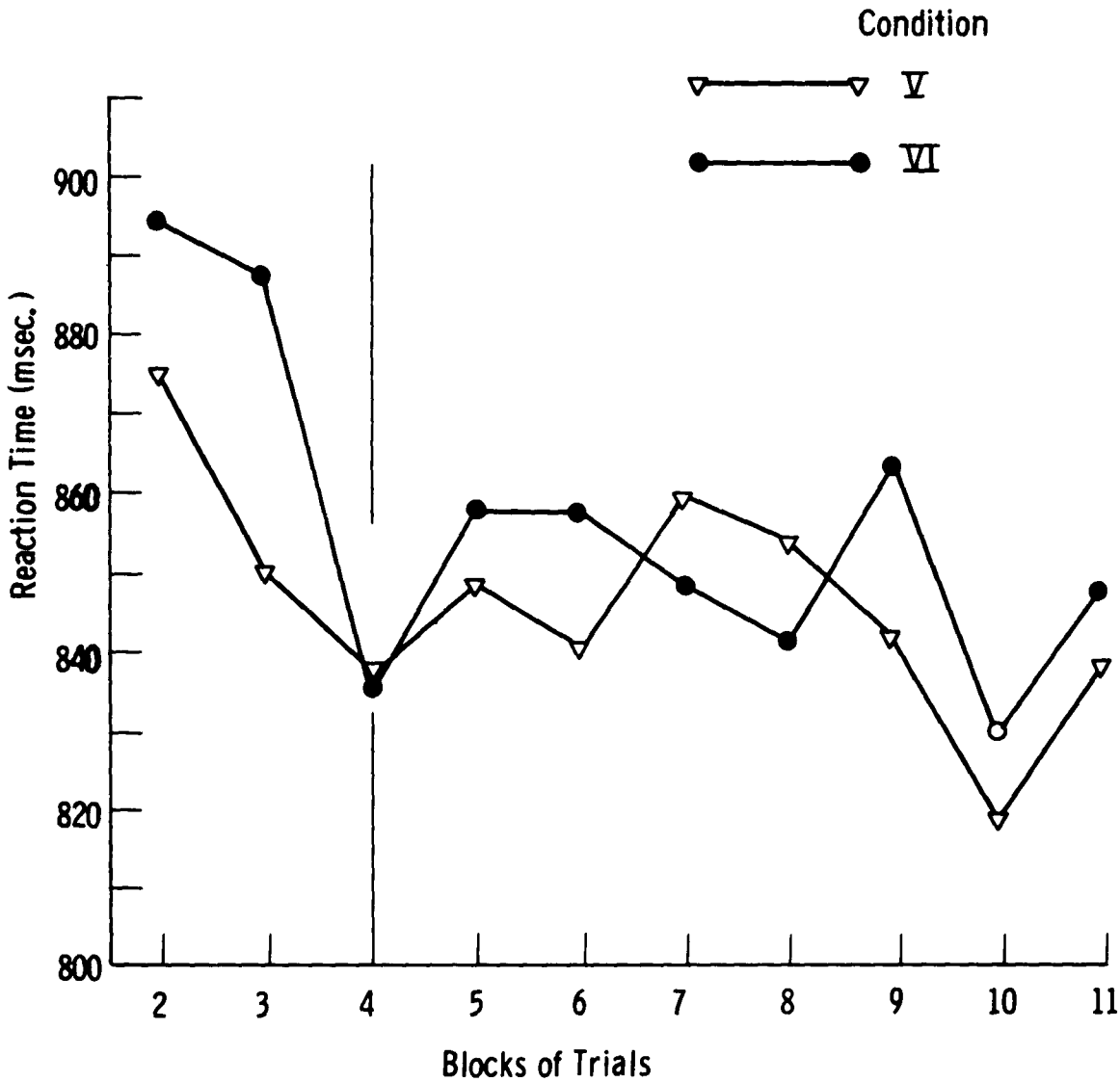
Mean RT of R-1 members under continuous (V) intermittent (VI) group success when no status change is appropriate (Controls)

FIGURE 12.



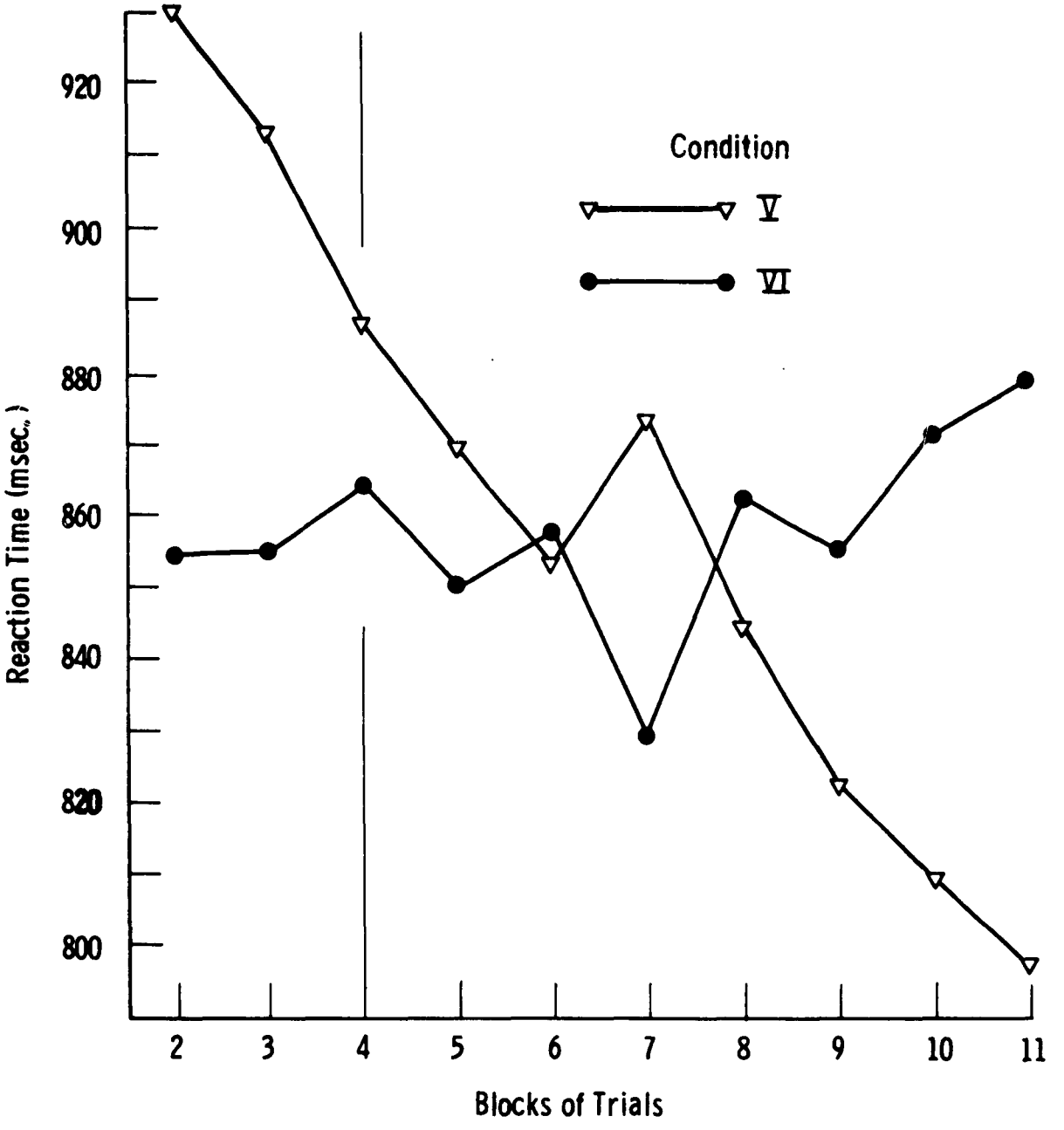
Mean RT of R-2 members under continuous (V) and intermittent (VI) group success when no status change is appropriate (Controls).

FIGURE 13.



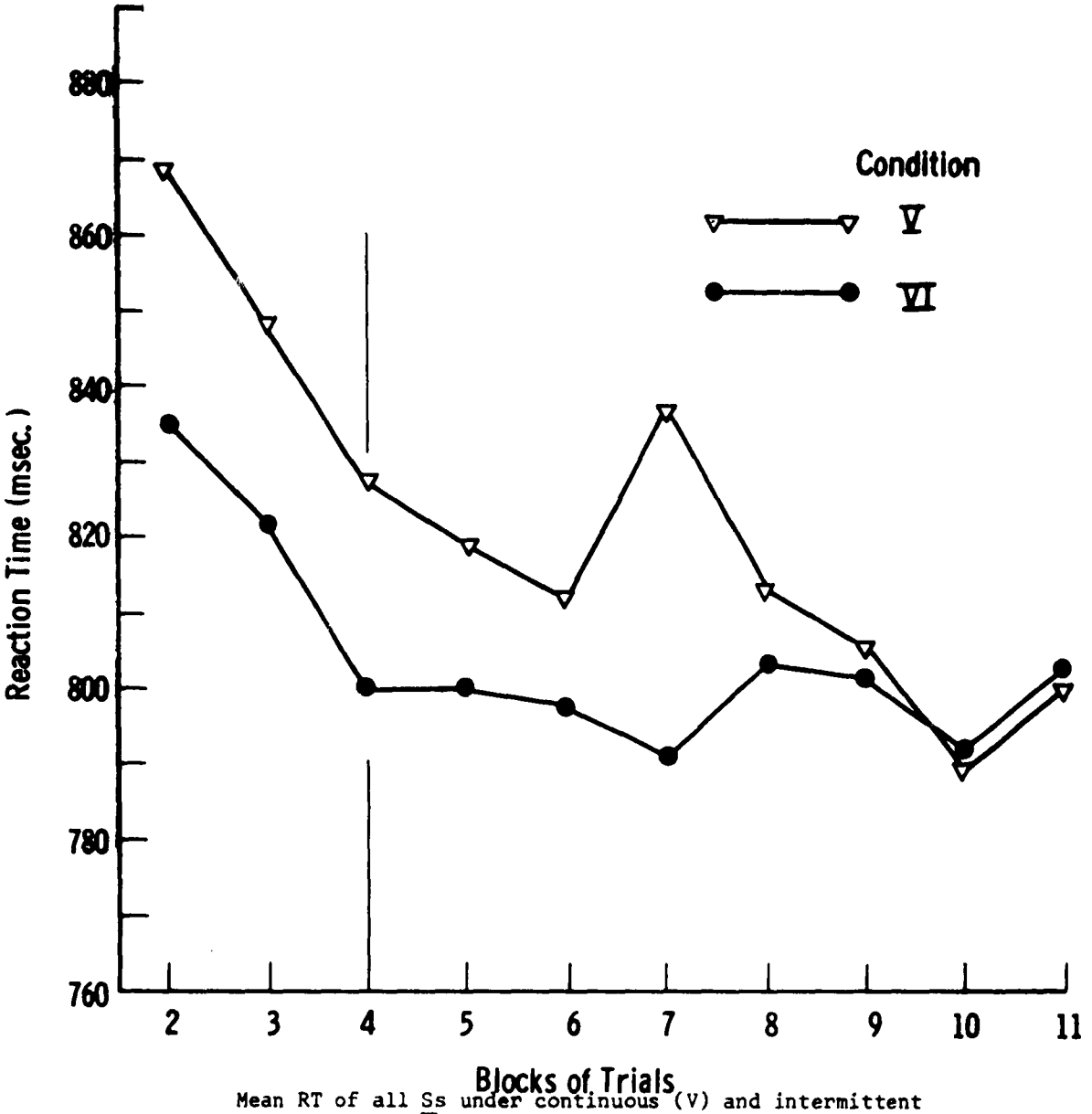
Mean RT of R-3 members under continuous (V) and intermittent (VI) group success when no status change is appropriate (Controls).

FIGURE 14.



Mean RT of R-4 members under continuous (V) and intermittent group success (VI) when no status change is appropriate (Controls).

FIGURE 15.



Mean RT of all Ss under continuous (V) and intermittent group success (VI) when no status change is appropriate (Controls).

Table 8

Summary of the analysis of variance of RT under continuous and intermittent group success when status changes are inappropriate (Conditions V and VI).

Source	df	MS	F
Rank (R)	3	4738.672	4.034****
Group success (GS)	1	612.500	---
GS X R	3	386.510	---
Error (b)	72	1174.661	
Blocks of Trials (B)	9	245.952	6.703****
R X B	27	18.621	---
GS X B	9	49.742	1.356
GS X P X B	27	64.188	1.749**
Error (w)	648	36.695	
Total	799		

** $P<.01$

**** $P<.001$

Discussion

Group performance seems to be enhanced by the introduction of status distinctions. There is a marked decline in RT at the point of introduction. However, since this occurs during the second block, it may well reflect practice effects which typically are strongest during early trials. This can easily be determined in later experiments where status distinctions are not introduced until a stable baseline is attained.

There is some suggestion that group performance improves temporarily when group success declines. However, this finding in respect to group RT is weak and no great confidence should be placed in it. The weakness is explained when the differential effects of group success as a function of status are noted. These are dramatic but permit no easy explanation. It would seem that when no appropriate change is necessary and group success becomes intermittent, decreases in RT are directly related to status. R-1 and R-2 in VI display improved performance, the former late, the latter early, compared to R-1 and R-2 under continuous group success. On the other hand R-3 and R-4 in VI evidence little or no decline in RT compared to their own controls in V. In fact, R-4 in VI has a decidedly slower RT than R-4 in V on later blocks. Thus, it seems that when group success becomes intermittent, the extent to which members make an effort to restore performance is directly related to their status in the group, i.e., to their responsibility for the group outcome.

When an incongruity exist at a specific status, the change in performance which occurs will depend on the direction and extent of the incongruity. If apparent performance falls below that appropriate to the status, the occupant's real performance will improve; when apparent performance climbs above what is appropriate to the status, real performance will decline. It is assumed that the level accepted as appropriate by the group at a given point in time depends on the level accepted in the past--the level which elicited no preference for displacing the occupant--and on the current levels at other positions. Thus,

when frequency of success declines for R-1, below that of past experience and below that of the adjacent rank, the occupant's RT decreases; in R-4 when the frequency of success increases above that of past experience and above that of adjacent ranks, the occupant's RT increases. A similar but less pronounced pattern is found in R-2 and R-3.

The increased or decreased effort in response to an incongruity between apparent and required performance is modified when the group decides to move the most incongruent member to a status the performance requirements of which are more in keeping with his current success. At the point a R-1 occupant is reduced in status, his performance declines, the decline being proportional to the reduction. Conversely, when a R-4 occupant is elevated, his RT decreases. However, the decrease does not seem to vary with the extent of status increase. It should be noted that in nearly all cases the increments and decrements in performance as a result of status changes appear temporary. The former R-1 occupant, now in R-4, again seems to decrease in RT while the former R-4 occupant, now in R-1, again seems to increase in RT.

The experimental design forces one to interpret some of the major findings with caution. Assignment to statuses was not made randomly, but according to baseline performance. There was a perfect positive rank order correlation between baseline RT and status. Thus, performance changes as a reaction to an incongruity cannot be interpreted unequivocally. RT differences may reflect differences in certain personality variables or differences in task interest. Changes in RT, therefore, may be in large part due to these factors and not to the type and extent of the incongruity or status change. At present, experiments in which negative rank order correlations obtain between baseline RT and status are being carried out. These data, plus the analysis of the personality inventory will permit a more definitive interpretation.

Summary

Reaction time performance was examined in a group setting (1) when status distinctions were introduced, (2) when an occupant's apparent performance was discrepant from that accepted by members as appropriate for his status, and (3) when the group changed a member's status because of a persisting discrepancy. Cooperative four-man groups performed a reaction time task. Members were to react quickly enough to prevent a failure signal from appearing. The latter was controlled by E, appearing according to a fixed schedule. The extent of success depended on the status of the successful members, high status members being able to contribute more points to the total than low status members. Status distinctions were introduced following practice. After each experimental block members privately voted on desired status changes. On the first four experimental blocks, individual success was scheduled to produce an optimum fit between an occupant's performance and that deemed appropriate to his status. After block four discrepancies were induced between apparent and appropriate performance. (1) Introduction of status distinctions produced a general decrease in RT. (2) Later performance changes depended on the direction and extent of the discrepancy between appropriate and apparent success. RT decreased when success became less frequent than that appropriate for the status. RT increased when success became more frequent than appropriate. (3) When a persistent discrepancy led the group to change a member's status, performance changes followed: an increase in status reduced RT; a reduction in status increased RT.

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